

REMARKS

Claims 15-19 were previously withdrawn. Claims 13, 37, 38 and 40-59 were previously canceled. Claims 1-12, 14-36, 39 and 60-69 are currently pending in this application.

Applicant graciously acknowledges the allowance of claims 20-24. Applicant further thanks the Examiner for noting that claims 5, 6, 8-10, 29, 30, and 32-34 contain allowable subject matter.

Claims 1-3, 25-27, 64, 65, 67, and 68 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Sakuragi et al, U.S. Patent Application Publication No. 2001/0020909 (Sakuragi). This rejection is respectfully traversed.

Independent claim 1 recites a pixel cell comprising, *inter alia*, “at least one transistor structure” having “at least two threshold voltages associated with the at least one channel region, and wherein a current-voltage characteristic of the transistor structure is determined at least in part by the threshold voltages.” Similarly, independent claim 25 recites an image sensor comprising, *inter alia*, “at least one transistor structure” having “at least two threshold voltages associated with the at least one channel region, and wherein a current-voltage characteristic of the transistor structure is determined at least in part by the threshold voltages.”

Sakuragi relates to a signal processing apparatus having an A/D converter capable of outputting a digital signal at high precision. Sakuragi at paragraph 44. In one embodiment cited by the Examiner, Sakuragi discloses a pixel and A/D conversion unit. Sakuragi at FIGS. 23 and 24. The Examiner states that the amplifying transistor 22 depicted in FIG. 23 has at least two threshold voltages, V_{th} , V_A , associated with the channel. The Examiner further states that the I-V characteristic of the amplifier

transistor 22 is determined at least in part by the threshold voltages. Office Action at 2. Applicant respectfully disagrees.

Sakuragi states that the transistor 22 has one threshold voltage (V_{th}). Where the gate-source voltage (V_{GS}) is below the threshold voltage, linearity between the drain current (I_d) and gate-source voltage (V_{GS}) is bad. This is due to the fact that the threshold voltage is the voltage needed to cause the channel region of the transistor to be conductive. Therefore, Sakuragi states that it is preferable that the voltage on the amplifier transistor gate (V_{GS}) is a value (V_A), which is larger than the threshold voltage (V_{th}) so that the amplifier transistor is not operating in the subthreshold region. Sakuragi does not state that the amplifier transistor includes at least one channel region having at least two threshold voltages. V_A is merely an unspecified value for the gate-source voltage (V_{GS}) that is above the value of the threshold voltage (V_{th}). Accordingly, Sakuragi does not disclose all limitations of independent claims 1 and 25. For at least these reasons, withdrawal of this rejection is respectfully requested.

Applicant also notes that claims 67 and 68 depend from claim 20. As the Examiner states that claim 20 is allowable, Applicants assume that the rejection of claims 67 and 68 was unintentional.

Claims 4, 7, 11, 12, 14, 28, 31, 35, 36, 39, 60-63, 66 and 69 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakuragi. This rejection is respectfully traversed.

A discussed above, Sakuragi fails to disclose, teach or suggest all limitations of either of independent claims 1 and 25. Independent claim 39 recites a processor system. Like claims 1 and 25, claim 39 also recites "at least one transistor structure" having "at least two threshold voltages associated with the at least one channel region,

and wherein a current-voltage characteristic of the transistor structure is determined at least in part by the threshold voltages." For at least the reasons discussed above, Sakuragi fails to teach or suggest all limitations of claim 39. Therefore, Applicant respectfully requests the withdrawal of this rejection.

Applicant also notes that claim 69 depends from claim 20. As the Examiner states that claim 20 is allowable, Applicants assume that the rejection of claim 69 was unintentional.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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